
Safety Evaluation Report

Related to the License Renewal of the
H. B. Robinson Steam Electric Plant, Unit 2

Docket No. 50-261

Carolina Power & Light Company

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Office of Nuclear Reactor Regulation

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ABSTRACT

This safety evaluation report (SER) documents the technical review of the H.B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2, known as Robinson Nuclear Plant (RNP), license renewal application (LRA) by the U.S. Nuclear Regulatory Commission (NRC) staff. By letter dated June 14, 2002, Carolina Power & Light Company (CP&L or the applicant) submitted the LRA for RNP in accordance with Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54 or the Rule). RNP is requesting renewal of the operating license for Unit 2 (License Number DPR-23) for a period of 20 years beyond the current expiration date of midnight, July 31, 2010.

RNP is adjacent to Unit 1 of the H.B. Robinson Steam Electric Plant (SEP), a coal-fired steam power plant. The plant is located on the edge of Lake Robinson, a manmade lake in Hartsville, South Carolina. The construction permit for RNP was issued by the NRC on April 13, 1967, and the operating license was issued September 23, 1970, pursuant to Section 104b of the Atomic Energy Act of 1954, as amended. The unit consists of a Westinghouse pressurized water reactor nuclear steam supply system designed to generate 2339 MW-thermal, or approximately 769 MW-electric.

This SER presents the status of the staff's review of information submitted to the NRC through August 25, 2003, the cutoff date for consideration in the SER. The staff has identified open items that must be resolved before the staff can make a determination on the application. These items are summarized in Section 1.6 of this report. In order to close these items, the staff requires the additional information identified in the open items. The staff will present its final conclusion on the review of the RNP application in its update to this SER.

ABBREVIATIONS

AC	alternating current
ACI	American Concrete Institute
ACRS	Advisory Committee on Reactor Safeguards (NRC)
AFW	auxiliary feedwater
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ALARA	as low as reasonably achievable
AMP	aging management program
AMR	aging management review
ANL	Argonne National Laboratory
ANSI	American National Standards Institute
API	American Petroleum Institute
ASA	American Standards Association
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
ATWS	anticipated transient without scram
AWWA	American Water Works Association
B&PV	boiler and pressure vessel
BIT	boron injection tank
BMI	bottom mounted instrumentation
BWR	boiling-water reactor
CASS	cast austenitic stainless steel
CCMS	core cooling monitor system
CE	Combustion Engineering, Inc.
CETS	core exit thermocouple system
CF	chemistry factor
CRD	control rod drive
CCW	component cooling water
CFR	Code Of Federal Regulations
CLB	current licensing basis
CMAA	Crane Manufacturers Association of America
CP&L	Carolina Power & Light Co.
CRDM	control rod drive mechanism
CSS	containment spray system
CST	condensate storage tank
CUF	cumulative usage factor
CV	containment vessel
CVCS	chemical and volume control system
DBA	design basis accident
DBD	design basis document
DBE	design basis earthquake
dc	direct current
DG	diesel generator
DOE	Department of Energy, U.S.

DS	dedicated shutdown
DSDG	dedicated shutdown diesel generator
EAF	environmentally assisted fatigue
ECCS	emergency core cooling system
EDB	equipment database
EOCI	electric overhead crane institute
ESS	extraction steam system
ET	eddy current testing (NRC List of Abbreviations has this as ECT)
EDG	emergency diesel generator
EFPY	effective full-power years
EHC	electrohydraulic control
EJMA	expansion joint manufacturers association
EMA	equivalent margins analysis
EOF	emergency operations facility
EPRI	Electric Power Research Institute
EQ	environmental qualification
ER	environmental report
ESF	engineered safety features
FAC	flow-accelerated corrosion
F _{en}	environmental fatigue multiplier
FERC	Federal Energy Regulatory Commission
FMP	fatigue monitoring program
FP	fire protection
FPC	Florida Power Corporation
FR	<i>Federal Register</i>
FHB	fuel-handling building
FSAR	final safety analysis report
FW	Feedwater
GALL	Generic Aging Lessons Learned (GALL) Report, NUREG–1801
GEIS	generic environmental impact statement
GDC	general design criterion/criteria
GL	generic letter
GSi	generic safety issue
HAD	heat-actuated device
HBRNS	H.B. Robinson Nuclear Station
HEPA	high-efficiency particulate air
HELB	high energy line break
HPSI	high pressure safety injection
HVAC	heating, ventilation, and air conditioning
I&C	Instrumentation and control
IA	instrument air
IASCC	irradiation assisted stress corrosion cracking
IEEE	Institute of Electrical and Electronic Engineers
IGA	intergranular attack
IGSCC	intergranular stress-corrosion cracking
IR	insulation resistance
ISG	interim staff guidance
ILRT	integrated leak rate test (Containment Type A Test)
IN	Information Notice

INPO	Institute Of Nuclear Power Operations
IPA	integrated plant assessment
ISI	inservice inspection
IVSW	isolation valve seal water
LBB	Leak before break
LOCA	loss-of-coolant accident
LR	license renewal
LRA	license renewal application
MRP	Material Reliability Project (EPRI)
MSS	main steam system
MCC	Motor control center
MDAFW	motor-driven auxiliary feedwater
MIC	microbiologically induced corrosion
MOV	motor-operated valve
MSIV	main steam isolation valve
NACE	National Association of Corrosion Engineers
NDE	nondestructive examination
NEPA	National Environmental Policy Act of 1969
NPAR	nuclear plant aging research
NPS	nominal pipe size
NUREG	NRC technical report designation (<u>N</u> uclear <u>R</u> egulatory Commission)
NEI	Nuclear Energy Institute
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Association
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
OE	operating experience
OCB	oil circuit breaker
P&I	piping and instrumentation
PMAMP	preventive maintenance aging management program
PAP	personnel access portal
pH	concentration of hydrogen ions
PM	preventive maintenance
PORV	power-operated relief valve
PPS	penetration pressurization system
PRT	pressurizer relief tank
P-T	pressure-temperature
PTS	pressurized thermal shock
PVC	polyvinyl Chloride
PWR	pressurized water reactor
PWSCC	primary water stress corrosion cracking
PWST	primary water storage tank
PZR	pressurizer
QA	quality assurance
QC	quality control
RAB	reactor auxiliary building
RAI	request for additional information
RCDT	reactor coolant drain tank
RCP	reactor coolant pump

RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
REDS	radioactive equipment drain system
RG	regulatory guide
RHR	residual heat removal
RMS	radiation monitoring system
RNP	Robinson Nuclear Plant
RO/RFO	refueling outage
RPS	reactor protection system
RPV	reactor pressure vessel
RT _{PTS}	reference temperature, pressurized thermal shock
RTS	reactor trip system
RV	reactor vessel
RWST	refueling water storage tank
RTD	resistance temperature detector
RVLIS	reactor vessel level instrumentation system
scss	steam cycle sampling system
SEP	steam electric plant
SGB	steam generator blowdown
SGBS	steam generator blowdown system
SGTR	steam generator tube rupture
SOC	Statement of Consideration
SRP-LR	Standard Review Plan for License Renewal
SUT	startup transformer
SAR	safety analysis report
SBO	station blackout
SCs	structures and components
SCC	stress corrosion cracking
SDAFW	steam-driven auxiliary feedwater
SER	safety evaluation report
SFP	spent fuel pit
SG	steam Generator
SI	safety injection
SIT	structural integrity test
SR	silicone rubber
SRP	standard review plan
SSCs	systems, structures, and components
SFPCS	spent fuel pit cooling system
SWS	service water system
TDR	time domain reflectometry
TGSCC	transgranular stress corrosion cracking
TID	total integrated dose
TLAA	time-limited aging analysis
TSC	Technical Support Center
UAT	unit auxiliary transformer
UV	ultraviolet
UFSAR	Updated Final Safety Analysis Report
USAS	United States Of America Standards
USE	Upper Shelf Energy

UT	ultrasonic test
Vac	volts alternating current
Vdc	volts direct current
VHP	vessel head penetration
VCT	volume control tank
WCAP	Westinghouse Commercial Atomic Power
WDS	waste disposal system
WOG	Westinghouse Owner's Group

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